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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,577	01/31/2002	Roland Green	700706.90068	9636

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EXAMINER

FORMAN, BETTY J

ART UNIT

PAPER NUMBER

1634

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/061,577	GREEN ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, Claims 1-6 in papers filed 10 July 2003 is acknowledged. The traversal is on the ground(s) that Groups I and II are related in that the claims of Group I are drawn to a method of operating instruments "such as that described in Claims 7 and 8." and that the instruments of Group II are designed for creating DNA arrays and do not have other significant uses.

The argument is not found persuasive because as stated in the Restriction Requirement, the apparatus of Invention II has numerous applications including synthesizing DNA arrays, performing analyte binding assays and purifying various molecules from a sample without performing the method steps of measuring illumination intensity, evaluating differences in illumination intensity and adjusting illumination intensity as required for the method of Invention I. Furthermore, the method of Invention I can be performed using a materially different apparatus, such as any light source, any light detector and does not require a single integrated apparatus comprising a flow cell, array of optical elements and projection optics capable of receiving light from the array of optical elements.

Applicant further argues that a search of the subject matter of either group would encompass are relevant to the other. However, it is maintained that undue burden would be required to examine the claims of Group II along with the claims of group I as evidenced by the fact that the claims of groups I and II have acquired a separate status in the art as recognized by their different classifications as recognized by their divergent subject matter and because a search of the subject matter of invention I is not co-extensive with a search of invention II. A search of the subject matter of invention I would encompass a search of method steps

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including steps of illumination, evaluating illumination and adjusting illumination. In contrast, a search of the subject matter of invention II would encompass a search of apparatus components including flow cells, light sources, optical elements and projection optics. As such, a search of the subject matter of invention I would not encompass of be co-extensive with a search of the subject matter of invention II.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The disclosure is objected to because of the following informalities:

The specification because under the heading "Brief Description of the Drawings" on page 4, Fig. 3 is not listed or described. The figure is discussed within the text of the specification on page 24.

Applicant is reminded that subject matter not describe in the specification as filed may be introduced into the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-6 are indefinite in Claim 1 because the claim is drawn to correcting illumination nonuniformity across an illumination area during synthesis. However, the method does not recite steps of correcting illumination nonuniformity or correcting illumination during synthesis. Therefore, it is unclear whether the method steps accomplish the method as claimed.

Claims 1-6 are indefinite in Claim 1, line 6 for the recitation "the difference in illumination intensity" because the recitation lacks proper antecedent basis in the claim.

Claims 1-6 are indefinite in Claim 1, line 8 for the recitation "the light directed to the brighter position.....the light directed to the less bright synthesis position" because the "light", "light directed", "brighter" and "less bright" all lacks proper antecedent basis in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGall (U.S. Patent No. 5,843,655, issued 1 December 1998) and Baker et al (U.S. Patent No. 6,262,795, issued 17 July 2001).

Regarding Claim 1, McGall teaches a method for testing and evaluating arrays during photolithographic synthesis of the array of oligomers from monomers (Column 1, lines 54-59; Column 2, lines 17-20; Column 4, lines 49-Column 5, line 10; and Column 6, line 12-Column 7, line 67) wherein illumination intensity from at least two oligomer synthesis positions is measured (Column 6, lines 12-62). McGall further teaches that quality control standards are needed to determine quality of chips being manufactured and for identifying optimal conditions for their manufacture (Column 1, lines 45-51). McGall does not teach that the illuminations is evaluated mathematically and adjusted to correct non-uniformity across the area.

However, Baker et al teach a method of quality control for photolithography comprising measuring illumination intensity of at least two different positions in the illumination area, evaluating mathematically the a difference in illumination intensity and adjusting the illumination intensity of light directed to a brighter position to match that of a less bright position (Column 6, lines 11-25 and Column 7, line 35-Column 8, line 30).

Regarding Claim 2, Baker et al teach their method wherein the intensity of the brighter position is reduced by reducing time of illumination i.e. via reflection (Column 6, lines 49-67).

Regarding Claim 3, Baker et al teach their method wherein reducing illumination time is accomplished by directing light away from the illumination area i.e. reflected (Column 6, lines 49-67)

Regarding Claim 4, Baker et al teach their method wherein the intensity of the brighter position is reduced by reducing the intensity of an illumination area e.g. reducing current or voltage (Column 6, lines 11-35).

Regarding Claim 5, Baker et al teach their method wherein reducing the light intensity is accomplished by placing a lithographic mask in front of the illumination area with different

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regions of the mask that correspond to different positions (Column 7, line 47-Column 8, line 30 and Fig. 3).

Regarding Claim 6, Baker et al teach their method further comprising measuring the adjusted illumination intensity of each position and further adjusting the intensities i.e. the homogenizer adjust filtered light to provide uniformity (Column 7, lines 35-46).

McGall teaches the need for improved quality control of photolithographic methods (Column 1, lines 54-51). Therefore, based on the teaching of McGall, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the photolithographic quality control taught by Baker et al to the photolithography oligonucleotide synthesis of McGall for the expected benefit of increasing uniformity of illumination and reducing photolithographic errors to thereby improve the quality of the photolithographic product as taught by Baker et al (Column 2, lines 1-40).

Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Blalock et al (U.S. Patent No. 6,344,641, issued 5 February 2002) teaches a method of correcting illumination comprising measuring, evaluating and adjusting the illumination (Abstract).

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Conclusion

8. No claim is allowed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (703) 306-5878. The examiner can normally be reached on 6:30 TO 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.



BJ Forman, Ph.D.
Primary Examiner
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September 25, 2003